RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Borehole 22-09-11

Log Event A

Borehole Information

Farm : BY	**Tank :** BY-109	**Site Number :** 299-E33-253
N-Coord : 46,137	**W-Coord :** 53,477	**TOC Elevation :** 647.00
Water Level, ft :	**Date Drilled :** 5/31/1974	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 100	

Borehole Notes:
The borehole was drilled with a cable tool drilling rig, and the casing is apparently ungrouted and unperforated.

Equipment Information

Logging System : 1	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 03/1995	**Calibration Reference :** GJPO-HAN-1	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 9/14/1995	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 23.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 9/15/1995	**Logging Engineer:** Mike Widdop
Start Depth, ft.: 99.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 22.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

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Analysis Information

Analyst : D.C. Stromswold

Data Processing Reference : P-GJPO-1787 Analysis Date : 2/27/1996

Analysis Notes :

Verification spectra collected before and after the log runs showed that the logging tool was operating properly.

Gain drift was minimal during data acquisition, enabling a single energy calibration to be used during data processing for run 2, and two energy calibrations for run 1.

Repeatability was good at the overlap log section, being within the statistical uncertainties.

Correction factors for 0.25-in.-thick steel casing were used during data processing. No water correction was applied because the borehole was dry.

Cs-137 and Co-60 were the only man-made contaminants detected in this borehole. Cs-137 occurred mainly from the surface to about 30 ft at concentrations less than about 100 pCi/g. Co-60 was detected at discontinuous locations in the interval from about 21 to 49 ft at concentrations of less than about 0.3 pCi/g.

K-40 concentrations increased below about 53 ft.

See the Tank Summary Data Reports for tanks BY-106 and BY-109 for additional log analysis.

Log Plot Notes:

Separate log plots show the man-made (e.g., Cs-137) and the naturally occurring radionuclides (K-40, U-238, and Th-232). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes both the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Westinghouse Hanford Company (WHC) Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data from WHC with no attempt to adjust the depths to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the minimum detection level (MDL). The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible. The MDL for U increased near 5 ft because of the enhanced background from Cs-137. As a result of the increased MDL, the U concentrations did not exceed the MDL and hence do not appear on the plots.